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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/588,559

05/31/2007

Markus Burgmair

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07/09/2008

O"SHEA GETZ P.C.

1500 MAIN ST. SUITE 912

SPRINGFIELD, MA 01115

EXAMINER

GARRITY, DIANA C

ART UNIT

PAPER NUMBER

2814

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/588,559	<b>Applicant(s)</b> BURGMAIR ET AL.	
	<b>Examiner</b> DIANA C. GARRITY	<b>Art Unit</b> 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 7-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 11-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> .                                  | 6) <input type="checkbox"/> Other: _____                          |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date: 8/4/06, 10/16/06, 6/21/07, 7/9/07.

## DETAILED ACTION

### *Election/Restrictions*

1. **Applicant's election without traverse of claims 1-6, 8, and 11-20 in the reply filed on June 2, 2008 is acknowledged.**

Applicant's election of claims 1-6, 8, and 11-20 in the reply filed on June 2, 2008 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. **Although Applicant responded with the election of claims 1-6, 8, and 11-12 corresponding to Group I, it has been determined by Examiner that claim 8 also reads upon the nonelected species.** Therefore, in accordance with the election made, claim 8 is also withdrawn from consideration.

Claim 8 refers to a **method of producing a gas sensor**, whereas Group I is directed toward a gas sensor. Claim 8 is associated with Group II only, thus claim 8 and all subsequent dependent claims dependent thereon are withdrawn from consideration.

Action on merits of claims 1-6 and 11-20 follows.

3. **Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim**

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**remaining in the application.** Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Information Disclosure Statement***

**4. The information disclosure statements filed 8/4/06, 10/16/06, and 6/21/07 fail to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and *all* other information or that portion which caused it to be listed.** They have been placed in the application file, but the information referred to therein has not been considered.

***Oath/Declaration***

**5. The oath or declaration is defective.** A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not identify the city and either state or foreign country of residence of each inventor. The *legible* residence information may be provided on either an application data sheet or supplemental oath or declaration.

***Specification***

**6. The title of the invention is not descriptive.** A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested:

Sensor comprising sensitive detection element and components containing hydrophobic coated silicon layer.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**7. Claims 1, 4-6, 11 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson et al. (US 4,020,830, hereinafter “Johnson”).**

*Regarding claim 1*, Johnson teaches a sensor (column 1, ln 6-8) comprising a plurality of components containing silicon (30, 32, 36 in view of column 4, ln 15-32) and having a sensitive detection element (column 5, ln 6-32), where electrical signals are read by a silicon semiconductor system (column 5, ln 6-32), where the components containing silicon are coated with a layer of hydrophobic material (38 and column 6, ln 28-49).

*Regarding claim 4*, Johnson teaches the components containing silicon comprise silicon, silicon nitride, or oxidized silicon (column 4, ln 59-68)

*Regarding claim 5*, Johnson teaches the silicon semiconductor system comprises a field effect transistor (column 1, ln 6-8).

*Regarding claim 6*, Johnson teaches the sensor comprises a sensor from the group including a gas sensor, a pressure sensor, and an acceleration sensor (column 3, ln 33-38).

*Regarding claim 11*, Johnson teaches a sensor (column 1, ln 6-8) comprising at least one component containing silicon (30, 32, 36) and having a sensitive detection element (column 5, ln 6-32), where the at least one component containing silicon includes a coating layer of hydrophobic material (38 and column 6, ln 28-49).

*Regarding claim 14*, Johnson teaches the sensor comprises a gas sensor (column 3, ln 33-38).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**8. Claims 2, 3, 12, 13, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson ('830) as applied to claims 1 and 11 above, and further in view of Angst et al. (Angst et al., "Moisture Absorption Characteristics of Organosiloxane Self-Assembled Monolayers," *Langmuir*, American Chemical Society, New York, NY, US, Vol. 7, No. 10, 1991, pages 2236-2242, XP0023313481, hereinafter "Angst") of record.**

*Regarding claim 2*, Johnson teaches the device of claim 1, but does not teach that the hydrophobic layer comprises molecular chains that form a stable bond to silicon.

However, Angst teaches a substance used for preventing the adsorption of water into silicon (Abstract), for the purpose of avoiding a layer of water on a semiconductor device that would cause undesirable currents (Introduction, paragraph 1, ln 20-27). Angst specifically teaches that the substance forms a stable bond with silicon (Introduction, paragraph 2, ln 1-13).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the Angst's hydrophobic substance in conjunction with Johnson's sensor in order to create a more reliable sensor in which water does not affect the adhesion of the hydrophobic layer to the silicon containing material.

*Regarding claim 3*, Johnson in view of Angst teaches the molecular chains form a monolayer (Introduction, paragraph 4, ln 1-12).

*Regarding claim 12*, Johnson in view of Angst teaches the hydrophobic coating layer comprises molecular chains that form a stable bond to silicon (Introduction, paragraph 2, ln 1-13).

*Regarding claim 13*, Johnson in view of Angst teaches the molecular chains form a monolayer (Introduction, paragraph 4, ln 1-12).

*Regarding claims 17-20*, Johnson teaches the sensor of claim 11. The expression “the hydrophobic coating layer is applied by silanization” is/are taken to be a product by process limitation and is given no patentable weight. Product by process claim directed to the product per se, no matter now actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al.*, 218 USPQ 289, 292 (Fed. Cir. 1983); *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); *In re Pilkington*, 411 F.2d 1345, 1348, 162 USPQ 145, 147, (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir. 1935); and particularly *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product “gleaned” from the process steps which must be determined in a “product by process” claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious patent produced by a new method is not a patentable product, whether claimed in “product by process” claims or not.

Note that Applicant has burden of proof in such cases as the above case law makes clear.

Further, Johnson in view of Angst teaches that the hydrophobic layer comprises octadecyltrichlorosilane (OTS) (Abstract).

**9. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagan (US Pub No. 2004/0067603, hereinafter “Hagan”) further in view of Angst.**

*Regarding claim 15*, Hagan teaches a sensor (paragraph 1) comprising at least one component containing silicon (official notice is taken that the chip is made of silicon) and having a sensitive detection element (paragraph 2), where the sensor comprises a pressure sensor (paragraph 2). Hagan does not teach that at least one component containing silicon includes a coating layer of hydrophobic material.

However, Angst teaches that sensors utilizing a plastic packaging (Hagan, paragraph 15) are susceptible to moisture causing detrimental effects on device performance because thin films of water provide undesired conducting pathways (Introduction, paragraph 1). Angst thus suggests that organosilanes as deterrents to undesired conducting pathways by repelling water from the device (Introduction, paragraph 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to coat the device of Hagan in the hydrophobic substance as described by Angst in order to have a fully functional sensor without the side effects of excess films of condensation.

*Regarding claim 16*, Hagan teaches a sensor (paragraph 1) comprising at least one component containing silicon (official notice is taken that the chip is made of silicon) and having

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a sensitive detection element (paragraph 2), where the sensor comprises an acceleration sensor (paragraph 2). Hagan does not teach that at least one component containing silicon includes a coating layer of hydrophobic material.

However, Angst teaches that sensors utilizing a plastic packaging (Hagan, paragraph 15) are susceptible to moisture causing detrimental effects on device performance because thin films of water provide undesired conducting pathways (Introduction, paragraph 1). Angst thus suggests that organosilanes as deterrents to undesired conducting pathways by repelling water from the device (Introduction, paragraph 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to coat the device of Hagan in the hydrophobic substance as described by Angst in order to have a fully functional sensor without the side effects of excess films of condensation.

### ***Double Patenting***

**10. Claims 1-6, and 11-14 of this application conflict with claims 1, 2, 3, 6, 7, and 9 of Application No. 10/566,412. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application.** Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection

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is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

**11. Claims 1-6 and 11-14 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 3, 6, 7, and 9 of copending Application No. 10/566,412.** Although the conflicting claims are not identical, they are not patentably distinct from each other for the reasons given below.

*Regarding claim 1*, Ruhe et al. (hereinafter "Ruhe") claims a sensor (claim 1: "a gas sensor") comprising a plurality of components containing silicon (One of ordinary skill in the art would assume that the channel area is made of silicon) and having a sensitive detection element (claim 1: "the gas sensitive layer"), where electrical signals are read by a silicon semiconductor system (One of ordinary skill in the art would know that a silicon channel is used in a semiconductor system) where the components containing silicon are coated with a layer of hydrophobic material (claim 1: "characterized in that a hydrophobic layers is arranged on the surface of the gas sensor between the gas sensitive layer and the channel area and/or a sensor

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electrode, which is electrically connected to a gate electrode arranged on the channel area” and claim 3: “hydrophobic layer extends continuously over the channel area and/or the sensor electrode”).

*Regarding claim 2*, Ruhe claims the hydrophobic layer comprises molecular chains that form a stable bond with silicon (claim 6: “molecules of the hydrophobic layer are covalently bound to the surface 10 of an adjacent, preferably semi-conductive or electrically insulating layer of the gas sensor,” and claim 7: “the hydrophobic layer contains at least one polymer.” One of ordinary skill in the art that “semi-conductive” typically means silicon).

*Regarding claim 3*, Ruhe claims the molecular chains form a monolayer (claim 9: “the polymer is connected by an intermediate layer that is preferably in the form of a monolayer to an adjacent preferably semi-conducting or electrically insulating layer of the gas sensor and further characterized in that the intermediate layer has at least one reactive group anchored on the adjacent layer, and that the polymer is coupled preferably by means of a covalent bond to 25 the intermediate layer.” Anyone of ordinary skill in the art would recognize that polymers attached to an intermediate layer, which is in turn covalently bound to a semi-conductive layer as a single layer covalently bound to a semi-conductive layer.).

*Regarding claim 4*, Ruhe claims the components containing silicon comprise silicon, silicon nitride, or oxidized silicon (claim 7: “semi-conductive layer”, one of ordinary skill in the art would recognize that semi-conductive layer typically means silicon).

*Regarding claim 5*, Ruhe claims the silicon semiconductor system comprises a field effect transistor (claim 1: “a gate electrode arranged on the channel area” is indicative of a field effect transistor).

*Regarding claim 6*, Ruhe claims the sensor comprises a sensor from the group including a gas sensor, a pressure sensor and an acceleration sensor (claim 1: “a gas sensor”).

*Regarding claim 11*, Ruhe claims a sensor (claim 1: “a gas sensor”) comprising at least one component containing silicon (claim 7: “semi-conductive layer”, one of ordinary skill in the art would recognize that semi-conductive layer typically means silicon) and having a sensitive detection element (claim 1: “the gas sensitive layer”), where the at least one component containing silicon includes a coating layer of hydrophobic material (claim 1: “characterized in that a hydrophobic layers is arranged on the surface of the gas sensor between the gas sensitive layer and the channel area and/or a sensor electrode, which is electrically connected to a gate electrode arranged on the channel area” and “hydrophobic layer extends continuously over the channel area and/or the sensor electrode”).

*Regarding claim 12*, Ruhe claims the hydrophobic layer comprises molecular chains that form a stable bond with silicon (claim 6: “molecules of the hydrophobic layer are covalently bound to the surface 10 of an adjacent, preferably semi-conductive or electrically insulating layer of the gas sensor,” and claim 7: “the hydrophobic layer contains at least one polymer.” One of ordinary skill in the art that “semi-conductive” typically means silicon).

*Regarding claim 13*, Ruhe claims the molecular chains form a monolayer (claim 9: “the polymer is connected by an intermediate layer that is preferably in the form of a monolayer to an adjacent preferably semi-conducting or electrically insulating layer of the gas sensor and further characterized in that the intermediate layer has at least one reactive group anchored on the adjacent layer, and that the polymer is coupled preferably by means of a covalent bond to 25 the intermediate layer.” Anyone of ordinary skill in the art would recognize that polymers attached to an intermediate layer, which is in turn covalently bound to a semi-conductive layer as a single layer covalently bound to a semi-conductive layer.).

*Regarding claim 14*, Ruhe claims the sensor comprises a gas sensor (claim 1: “a gas sensor”).

**12. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.**

### ***Conclusion***

**13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DIANA C. GARRITY whose telephone number is (571) 270-5026. The examiner can normally be reached on Monday-Friday 7:00 AM - 3:30 PM EST.**

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anh Mai can be reached on (571) 272-1710. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Diana C Garrity/  
Examiner, Art Unit 2814

/Anh D. Mai/  
Primary Examiner, Art Unit 2814